

EXHIBIT G

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**EXPERT WITNESS DISCLOSURE
JOHN F. ASHLEY**

UNITED STATES OF AMERICA,

Plaintiff,

v.

**UNITED MICROELECTRONICS
CORPORATION; FUJIAN JINHUA
INTEGRATED CIRCUIT, CO., LTD.; CHEN
ZHENGKUN, a.k.a. STEPHEN CHEN; HE
RANTING, a.k.a. J.T. HO; and WANG
YUNGMIN, a.k.a. KENNY WANG.,**

Defendants,

Case 3:18-cr-00465-MMC

September 10, 2021

**EXPERT WITNESS DISCLOSURE
JOHN F. ASHLEY**

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I. Introduction

My name is John F. Ashley. I have been retained through my employer Consilio, LLC (“Consilio”) by Fujian Jinhua Integrated Circuit, Co., Ltd. (“Jinhua”), as an independent computer forensic expert to review Andrew Crain’s expert disclosure and to perform a forensic examination of multiple forensic images of electronic storage devices, all but one of which, were reportedly seized by Ministry of Justice Investigation Bureau officers (“MJIB”) in Taiwan between February 7, 2017 and February 14, 2017. One Intel SSD hard drive was provided to the FBI by Fronteo, Inc. on behalf of United Microelectronic Corporation (“UMC”) and subsequently imaged by Berkeley Research Group.

This report represents the results of my examination as it stands at the time of writing. I reserve the right to supplement this report if new facts are uncovered or if further information is made available to me.

II. Qualifications Summary

I am currently the Managing Director of Digital Forensics and Expert Services at Consilio, 1828 L Street N.W., Suite 1070, Washington, DC 20036. Prior to moving to the United States, I was the head of the Greater Manchester Police Department’s Computer Examination Unit, which at that time was the largest criminal computer forensics unit in Europe. I was responsible for all computer examinations in Manchester, England, North Wales, and the Isle of Man. I also assisted other European and United States law enforcement agencies as required.

I have worked continuously in the computer forensics field since 1989, having been qualified as an expert in criminal and litigation matters on more than 80 occasions. I have never failed to be qualified as a computer forensics expert. I have also been qualified as an

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expert in the investigation of conspiracy by the District Court for the Eastern District of Virginia.

My Curriculum Vitae, attached as **Exhibit 1**, provides more details about my professional background and experience, including my experience as an expert consultant and witness in matters related to computer forensics in both Europe and the United States.

I have extensive experience in the operating systems and application software in use on the devices I examined in this matter.

III. Compensation

Consilio is being compensated based upon the amount of time spent performing the investigation, preparing this report, and testifying (if required). Payment of Consilio's fee is not contingent on either the opinions reached or the outcome of this matter. Usual and customary rates of \$450 an hour for consulting or analysis and \$500 an hour for written or oral testimony are being charged.

IV. Materials Reviewed

Jinhua's counsel provided me with relevant documentary materials for review.

See attached as **Exhibit 2**. In relevant part, among the provided materials was:

- A copy of Micron Technology, Inc.'s ("Micron") civil complaint against UMC and Jinhua, filed December 5, 2017 ("Micron Civil Complaint"). See DOJ0352686 through DOJ035276, **Exhibit 3**.
- A copy of the Indictment in this current matter, issued by The United States District Court and filed on September 27, 2018. See **Exhibit 4**.
- A copy of the Protective Order filed by the Court on November 1, 2019, which I read and then signed Exhibit B to the Order, Acknowledgment of Protective Order by Expert, on August 10, 2021. See **Exhibit 5**.
- A Seagate hard drive, serial number WS20822C, labeled TAIWANHD_F1-00000001 containing forensic images received from Taiwan (the "Seagate

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Drive”). The US Department of Justice sent this drive to Jinhua’s counsel via FedEx on May 3, 2021.

V. Forensic Images Examined for This Report

To date I have analyzed the forensic images for the devices shown in Table 1 below which I found on the Seagate Drive. Table 2 provides a more detailed report of my findings on each of those devices, including the device details; the reported dates on which these devices were seized by the Taiwan MJIB, the dates on which data was altered following MJIB seizure and the dates when the devices were forensically imaged by the MJIB.

Table 1: Forensic Images Examined to Date

BRG Evidence Number	Taiwan Evidence Number	Device Type	Model	Date of MJIB Imaging (Taiwan)
BRG003	106030-25-03-INTEL-CVTR548103WR240CGN-240GB	Laptop	SSD Model: INTEL_SSDSC2BW240H6	2/20/2017
BRG004	106030-25-04-sandisk-null-8GB	USB Disk	Model: Cruzer Edge	2/20/2017
BRG006	106030-25-06-RUNDISK-NULL-1GB	USB Disk	Model: Rundisk	2/20/2017
BRG007	106030-25-07-WD-WCANME19308-160GB	USB Portable Drive	HDD Model: WDC_WD1600JB-00REA0	2/20/2017
BRG008	106030-25-08-WD-WXR1EB0YVJ30- 640GB	USB Portable Drive	HDD Model: WDC_WD6400BEVT-22A0RT0	2/20/2017
BRG009	106030-25-09-WD-WXL1A61D6393-250GB	Acer laptop	HDD Model: WDC_WD2500BEVT-00A23T0	2/20/2017
BRG010	106030-25-10-FUJITSU-NW9XT682R86A	Laptop	HDD Model: FUJITSU_MHV2120BH_PL	2/20/2017
BRG011	106030-25-11-TRANSCEND-B336790267-1TB	USB Disk	Model: ST1000LM024_HN-M101MBB	2/20/2017
BRG012	106030-25-12-TOSHIBA-null-500GB	HP Laptop	HDD Model: TOSHIBA_MK5061GSYN	2/20/2017
BRG013	106030-25-13-PNY-null-128GB	USB Disk	Model: USB 3.0 FD	2/20/2017
BRG014	106030-25-14-KINGSTON-NULL-64GB	USB Disk	Model: DataTraveler 2.0	2/20/2017
BRG016	106030-25-16-INTEL-CVTR5413022DD240CGN-240GB	Asus laptop	SSD Model: INTEL_SSDSC2BW240H6	2/18/2017
BRG020	106030-25-20-HITACHI-GZHDS1S-500GB	Hard Disk	HDD Model: Hitachi_HTS545050A7E380	2/18/2017

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BRG Evidence Number	Taiwan Evidence Number	Device Type	Model	Date of MJIB Imaging (Taiwan)
BRG021	106030-25-21-NULL-5371650888-8GB	USB Disk	Model: Transcend 8GB	2/20/2017
BRG022	106030-25-22-WD-WX71AC519NPN-500GB	USB Portable Drive	My Passport 0827	2/18/2017
BRG023	106030-25-23-KINGSTON-null-240GB	Acer laptop	Model: KINGSTON_RBU-SC100S37240GE	2/18/2017
BRG024	106030-25-24	USB Disk	Model: Transcend 32GB	2/20/2017
BRG028	FTW-000158 (TUH194)	Laptop Drive	SSDSC2BW240H6	4/30/2021 USA

Table 2: Showing Dates of Seizure and Dates of Data Alteration

BRG Evidence Number	Taiwan Evidence Number	Device Type	Date of MJIB Seizure (UTC + 8)	Date of Data Alteration	Date of MJIB Imaging (Taiwan)
BRG003	106030-25-03-INTEL-CVTR548103WR240CGN-240GB	Laptop	2/7/2017 14:10	2/7/2017 2/8/2017 2/13/2017 2/17/2017	2/20/2017
BRG004	106030-25-04-sandisk-null-8GB	USB Disk	2/7/2017 14:10	2/7/2017 2/17/2017	2/20/2017
BRG006	106030-25-06-RUNDISK-NULL-1GB	USB Disk	2/7/2017 14:10	2/13/2017	2/20/2017
BRG007	106030-25-07-WD-WCANME19308-160GB	USB Portable Drive	2/7/2017 14:10		2/20/2017
BRG008	106030-25-08-WD-WXR1EB0YVJ30- 640GB	USB Portable Drive	2/7/2017 14:10		2/20/2017
BRG009	106030-25-09-WD-WXL1A61D6393-250GB	Acer laptop	2/7/2017 14:10	2/7/2017 2/13/2017	2/20/2017
BRG010	106030-25-10-FUJITSU-NW9XT682R86A	Laptop	2/7/2017 14:10		2/20/2017
BRG011	106030-25-11-TRANSCEND-B336790267-1TB	USB Disk	2/8/2017	2/13/2017	2/20/2017
BRG012	106030-25-12-TOSHIBA-null-500GB	HP Laptop	2/9/2017	2/9/2017 2/13/2017 2/14/2017 2/20/2017	2/20/2017

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BRG Evidence Number	Taiwan Evidence Number	Device Type	Date of MJIB Seizure (UTC + 8)	Date of Data Alteration	Date of MJIB Imaging (Taiwan)
BRG013	106030-25-13-PNY-null-128GB	USB Disk	2/9/2017	2/13/2017 2/14/2017	2/20/2017
BRG014	106030-25-14-KINGSTON-NULL-64GB	USB Disk	2/9/2017	2/14/2017	2/20/2017
BRG016	106030-25-16-INTEL-CVTR5413022DD240CGN-240GB	Asus laptop	2/14/2017		2/18/2017
BRG020	106030-25-20-HITACHI-GZHDS1S-500GB	Hard Disk	2/14/2017		2/18/2017
BRG021	106030-25-21-NULL-5371650888-8GB	USB Disk	2/14/2017		2/20/2017
BRG022	106030-25-22-WD-WX71AC519NPN-500GB	USB Portable Drive	2/14/2017		2/18/2017
BRG023	106030-25-23-KINGSTON-null-240GB	Acer laptop	2/14/2017	2/14/2017	2/18/2017
BRG024	106030-25-24	USB Disk	2/14/2017	2/14/2017	2/20/2017
BRG028	FTW-000158 (TUH194)	Laptop Drive	4/12/2021 to FBI		4/30/2021 USA

VI. Device Forensic Analysis and Findings of Data Alteration

The correct handling of electronic devices is critical to ensure that there is no alteration to, or contamination of the data and metadata present on the storage media in such devices. Full contemporaneously signed and dated chain of custody records should be maintained showing device make and model details, the names of persons producing or receiving the device and recording similar details for any subsequent movement of devices.

At the earliest opportunity after the seizure of such devices, verified forensic images should be created on new or previously prepared media, with write blocking devices utilized to prevent any possibility of data alteration or corruption on the original devices. To avoid alteration or corruption of the evidence, all investigation should be performed on verified copies of the forensic images, not on the original devices.

Based on my examination of the devices imaged on the Seagate Drive, the authorities who seized the devices at issue here failed to follow these well-established methods for the collection, imaging and preservation of forensic data in several key

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respects as discussed in more detail below. More specifically, it appears that on numerous occasions, the authorities who seized the subject devices (1) failed to create proper forensic images of the devices immediately after they were seized; (2) performed searches or otherwise accessed the subject devices after they were seized (rather than conducting all investigations on the forensic images), thus altering and corrupting this evidence; and (3) in some cases, added information onto these devices, thus further corrupting the evidence. These actions, which are described in more detail below, have contaminated key pieces of evidence and create serious doubts about the credibility of the evidence collection in this case.

I have not been provided with any original, contemporaneous Taiwanese chain of custody records or search warrants relating to the February 7, 2017 and February 14, 2017 device seizures, or any subsequent device movement by Taiwanese officials prior to the point in time when the Seagate Drive containing the forensic images was transferred to the United States Federal Bureau of Investigation (“FBI”). However, I have been provided what appear to be post-hoc records by Taiwanese officials pertaining to the seizure of the 26 devices comprising the Seagate Drive. (*See* USD-0838083; USD-0838175; USD-0838190; USD-0838196; USD-0838204; USD-0838179; USD-0838181; USD-0838189; USD-0838082.) My understanding is that Jinhua’s counsel has not found any contemporaneous Taiwanese chain of custody documents or search warrants in the documents produced by the government, and that Jinhua’s counsel has asked, or will request, the government to provide such materials.

My investigation of the 18 devices listed in Table 1 has confirmed that following seizure and prior to being forensically imaged, the majority of the devices (10) were accessed on multiple dates for significant periods of time.

Significant numbers of files and folders were created on these devices or were deleted from these devices after their reported seizure. Critical time and date metadata was also altered and updated. Operating System and Application Software artifacts and log

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files were changed or overwritten. Gigabytes of electronic data storage space were overwritten and are no longer available to be investigated. Despite this widespread device usage which occurred after the items were seized and prior to the forensic imaging by the MJIB forensic laboratory, there is no mention of any data alteration or evidence contamination in the Crain Report.

The Micron Civil Complaint against UMC and Jinhua indicates that the February 7, 2017 raids by the Prosecutor and the Taiwan MJIB occurred simultaneously at 14:10 Local time. *See* Micron Civil Complaint, Exhibit 3 at VI (USD-0352745). Because the original Taiwanese chain of custody logs have not been produced, and there is no reference in any of the other information which I have been provided, I am unable to confirm the exact times of day that the other device seizures occurred.

I have summarized my findings with respect to each of the 10 devices on which I found data alteration or deletion after the device was seized but before it was imaged in Sections VI (A)-(J), below.

A. 106030-25-03 (BRG003) Intel 240GB UMC Laptop drive

Based on my examination of BRG003, approximately 35,533 files or folders on the device had their Modified, Accessed and Created time and date metadata information updated following seizure and prior to forensic imaging. In addition, I found that 34,905 files or folders were created and 1,267 files or folders were deleted during that period in between BRG003's seizure and the date that it was forensically imaged. I also found that 2,147 of the file and folders which had their time and metadata altered *after* seizure were being accessed under a user profile (C\Users\00046685 (Kenny Wang), which the Taiwanese authorities and the Crain Report indicate belongs to Kenny Wang. *See* MJIB Alteration File Listing report attached as **Exhibit 6**.

1. Chronology of times when data was being altered:

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- a) 2/7/2017 14:10¹ – seized by New Taipei Investigation Office.
- b) 2/7/2017 14:17 – to 23:58 machine being accessed.
- c) 2/7/2017 15:36 to 16:09 – the NBD folder and sub folder structure and contents were copied to and created on the Logical D: partition of the laptop drive. Analysis of the Laptop Network Share Information shows that the server \\p58f21\Data\NBD folder is mapped to the Laptop.
- d) 2/8/2017 00:00 to 06:46 – machine being accessed.
- e) 2/8/2017 00:33 – Generic Flash Disk USB Device, Serial Number 07C0C091&0 inserted into this laptop. This USB device has not been produced for examination. *See* USB Devices report attached as **Exhibit 7**.
- f) 2/13/2017 13:58 to 19:32 – machine being accessed.
- g) 2/13/2017 15:34 – PNY USB 3.0 FD USB Device, Serial Number 340373E9817A4117B03132FD0F7679&0 inserted into the laptop. This USB device is referenced as (BRG013) in Table 2 and is an evidentiary exhibit in its own right. *See* USB Devices report attached as **Exhibit 7**.
- h) 2/13/2017 15:37 – The file “EES_2011000015-006 25nmS_periphery the others.xls” which was stored on the attached USB Disk (BRG013), was opened, causing a Windows LNK file to be created on the laptop.
- i) 2/13/2017 15:41 – The file “ **【DR25nmS】** Temporary design rules Periphery Rev.06.xls” which was stored on the attached

¹ All time referred to herein is to the local time in Taiwan (UTC + 8 hrs)

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USB Disk (BRG013), was opened, causing a Windows LNK file to be created on the laptop.

- j) 2/13/2017 – According to Micron’s Civil Complaint, a review was performed by witness Yi-Leng Chen who was reportedly employed as the real-time defect-analysis department manager by Micron Memory Taiwan (MMT). *See* Micron Civil Complaint, USD-0352748 at 16 and USD-0352759 Item No. A-8 at 2. A transcript of the MJIB interrogation of Yi-Leng Chen confirms that he was engaged from 11:25 until 19:25 on 2/13/2017 reviewing files in a live environment on seized UMC devices which are actual Exhibits in this case. The Exhibits included several USB devices and Kenny Wang’s Acer laptop. *See* transcript attached as **Exhibit 21**.
- k) 2/17/2017 09:53 to 10:14 – machine being accessed
- l) 2/17/2017 09:58 – JetFlash Transcend 8GB USB Device, Serial Number OG23WAHU&0 inserted into the laptop. This USB device has not been produced for examination *See* USB Devices report attached as **Exhibit 7**.
- m) 2/17/2017 10:08 – PIONEER DVD-RW DVR-XD11 USB Device, Serial Number NGQC171770WL____&0 accessed. No DVD Disks produced for examination. *See* USB Devices report attached as **Exhibit 7**.
- n) 2/20/2017 12:02 – forensically imaged to EnCase E01 format by Examiner 49052.

Forensic analysis confirms that after the UMC Laptop was seized from Kenny Wang and in the possession of the Prosecutor and MJIB officers, Windows File Explorer was used to navigate to and open hundreds of files on the Laptop on February 7, 8 and 13,

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2017. When files are opened in this manner, the Windows Operating System records details in the Internet Explorer Main History, showing the file path and file title, the User profile being used and the time and date that the file was opened, as reflected in my report. See report attached as **Exhibit 8**.

The Crain Report makes no reference to the potential spoliation of evidence and alteration of data on this laptop after it had been seized by the MJIB. Almost 35,000 files were added to the drive in this laptop and more than 1,000 files were deleted. Of the files and folders added, 32,688 were copied from the mapped network server \\p58f21\Data\NBD on 2/7/2017. Multiple USB devices were also attached on that date. The total data size added to the drive by the MJIB activity is 13.38 Gigabytes. All of that overwritten data space has been destroyed including any evidence that existed thereon at the time of seizure by the MJIB.

B. 106030-25-04 (BRG004) SanDisk Cruzer Edge 8GB USB disk

Following seizure and prior to forensic imaging, 93 files and 5 folders were created on the USB drive. Files and folder appear to be the result of Lotus Notes email being exported in compressed form and expanded on to the USB drive. The 93 files and 5 folders were the only files and folders on the drive. See MJIB Alteration File Listing report attached as **Exhibit 9**.

1. Chronology of times when data was being altered:

- a) 2/7/2017 14:10 – seized by New Taipei Investigation Office.
- b) 2/17/2017 – 90 of the files had their Last Accessed time and date metadata information updated.
- c) 2/20/2017 17:29:47 – forensically imaged to EnCase E01 format by Examiner 49052.

The Crain Report makes no reference to the potential spoliation of evidence and alteration of data that occurred on this USB drive after seizure by the MJIB. All of the

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files and folders that are present on the USB drive were added to it 10 days after the drive was seized by the MJIB.

C. 106030-25-06 (BRG006) Rundisk 1GB USB drive

Following seizure and prior to forensic imaging, 1 file was created and deleted and 8 other files were last accessed on the USB drive. *See* MJIB Alteration File Listing report attached as **Exhibit 10**.

1. Chronology of times when data was being altered:

- a) 2/7/2017 14:10 – seized by New Taipei Investigation Office.
- b) 2/13/2017 – According to Micron’s Civil Complaint, a review was performed by witness Yi-Leng Chen who was employed as the real-time defect-analysis department manager by Micron Memory Taiwan (MMT). *See* Micron Complaint, USD-0352748 at 16 and USD-0352759 Item No. A-8 at 2. A transcript of the MJIB interrogation of Yi-Leng Chen confirms that he was engaged from 11:25 until 19:25 on 2/13/2017 reviewing files in a live environment on seized UMC devices which are actual Exhibits in this case. The Exhibits included several USB devices and Kenny Wang’s Acer laptop, transcript produced as **Exhibit 21**.
- c) 2/20/2017 17:19 – forensically imaged to EnCase E01 format by Examiner 49052.

The Crain Report makes no reference to the alteration of data on this USB drive after it had been seized by the MJIB. It is apparent from the transcript of the MJIB interrogation of the Micron employee Yi-Leng Chen that he was actually reviewing the files that had their Last Accessed dates updated on 2/13/2017 and may also have been the person who created and then deleted the file titled Fab11_twr_materials_for_25nm_task_force_V6.pptx. The last paragraph on page 5 of the

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interrogation transcript includes a list of files which he reviewed. Amongst them are 4G3D Bin z v(1).s WAT param correlation.xls, Fab11_twr_materials_for_25nm_task_force_V6.pptx and WAT param check for 1RF7463E.WWC10 split.xls. These 3 filenames are identical to three of the files that had their metadata altered on 2/13/2017. *See* transcript attached as **Exhibit 21**.

D. 106030-25-09 (BRG009) Western Digital 250GB drive from Acer Laptop

Following seizure and prior to forensic imaging, approximately 4,537 files or folders had their Modified, Accessed and Created time and date metadata information updated, including 91 files or folders that were created and 15 files or folders that were deleted on or after that date. *See* MJIB Alteration File Listing report attached as **Exhibit 11**.

1. Chronology of times when data was being altered:
 - a) 2/7/2017 14:10 – seized by New Taipei Investigation Office.
 - b) 2/7/2017 16:44 to 17:13 – machine being accessed.
 - c) 2/7/2017 16:57:00 – -Pretec 02GB USB Device, Serial Number 01D1700000050B&0 inserted into this laptop. This USB device has not been produced for examination. *See* USB Devices report attached as **Exhibit 12**.
 - d) 2/7/2017 16:57:47 – -Pretec 02GB USB Device, Serial Number 1a451c61cd47fb&0 inserted into this laptop. This USB device has not been produced for examination. *See* USB Devices report attached as **Exhibit 12**.
 - e) 2/7/2017 17:04:27 – USB 2.0 Flash Disk USB Device, Serial Number 0910baf231d019&0 inserted into this laptop. This USB device has not been produced for examination. *See* USB Devices report attached as **Exhibit 12**.

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- f) 2/7/2017 17:07:54 Generic External USB Device, Serial Number 5744D575852314542305956&0 inserted into this laptop. This USB device has not been produced for examination. *See* USB Devices report attached as **Exhibit 12**.
- g) 2/7/2017 17:10:19 – USBDisk RunDisk USB Device, Serial Number 0610291136373&0 inserted into this laptop. This USB device is referenced as (BRG006) in Table 2 and is an evidentiary exhibit in its own right. *See* USB Devices report attached as **Exhibit 12**.
- h) 2/13/2017 13:14 to 18:52 – machine being accessed.
- i) 2/13/2017 – According to Micron’s Civil Complaint, a review was performed by witness Yi-Leng Chen who was employed as the real-time defect-analysis department manager by Micron Memory Taiwan (MMT). *See* Micron Complaint Bates number USD-0352748 at 16 and USD-0352759 Item No. A-8 at 2. A transcript of the MJIB interrogation of Yi-Leng Chen confirms that he was engaged from 11:25 until 19:25 on 2/13/2017 reviewing files in a live environment on seized UMC devices which are actual Exhibits in this case. The Exhibits included several USB devices and Kenny Wang’s Acer laptop. *See* transcript attached as **Exhibit 21**.
- j) 2/20/2017 13:39 – forensically imaged to EnCase E01 format by Examiner 49052.

The Crain Report makes no reference to the potential spoliation of evidence and alteration of data that occurred on this Acer laptop after it had been seized by the MJIB. More than 4,500 files and folders had their metadata details altered with a number of files being added to or deleted from the laptop. It is apparent from the transcript of the MJIB interrogation of the Micron employee Yi-Leng Chen that he was actually reviewing the

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files in the D:\USB\YE FA POOL folder structure which all had their Last Accessed dates updated on 2/13/2017. This folder structure, identically named to how it is stored on the laptop, is specifically referenced by Yi-Leng Chen in his answer at the top of page 6 of the interrogation transcript. *See* transcript attached as **Exhibit 21**.

E. 106030-25-11 (BRG011) Transcend 1TB USB drive

Following seizure and prior to forensic imaging 31 files were created on the drive and deleted on or after that date. *See* MJIB Alteration File Listing report attached as **Exhibit 13**.

1. Chronology of times when data was being altered:

- a) 2/8/2017 – seized by New Taipei Investigation Office.
- b) 2/13/2017 – drive being accessed until 2/14/2017 01:10.
According to Micron's Civil Complaint, a review was performed by witness Yi-Leng Chen who was employed as the real-time defect-analysis department manager by Micron Memory Taiwan (MMT). *See* Micron Complaint Bates number USD-0352748 at 16 and USD-0352759 Item No. A-8 at 2. A transcript of the MJIB interrogation of Yi-Leng Chen confirms that he was engaged from 11:25 until 19:25 on 2/13/2017 reviewing files in a live environment on seized UMC devices which are actual Exhibits in this case. The Exhibits included several USB devices and Kenny Wang's Acer laptop. *See* transcript attached as **Exhibit 21**.
- c) 2/20/2017 17:43 – forensically imaged to EnCase E01 format by Examiner 49052.

The Crain Report makes no reference to the potential spoliation of evidence and alteration of data that occurred on this USB device after it had been seized by the MJIB. A total of 31 files were created and then deleted from this device on 2/13/2017, six days

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after it had been seized. It is apparent from the transcript of the MJIB interrogation of the Micron employee Yi-Leng Chen that he actually reviewed the files and folders under the \d data\ folder structure on 2/13/2017. This folder structure, identically named to how it is stored on the USB drive, is specifically referenced by Yi-Leng Chen in his answer at the top of page 2 of the interrogation transcript. *See* transcript attached as **Exhibit 21**.

F. 10630-25-12 (BRG012) Toshiba 500GB drive from HP Laptop

Following seizure and prior to forensic imaging, 512 files or folders had their Modified, Accessed and Created time and date metadata information updated, including 160 files or folders that were created and 21 files or folders that were deleted on or after that date. *See* MJIB Alteration File Listing report attached as **Exhibit 14**.

1. Chronology of times when data was being altered:
 - a) 2/9/2017 – submitted by Huang Shu-han to Taichung District Prosecutor's Office.
 - b) 2/9/2017 17:24 to 17:26 – machine being accessed.
 - c) 2/13/2017 13:46 to 21:18 – machine being accessed. According to Micron's Civil Complaint, a review was performed by witness Yi-Leng Chen who was employed as the real-time defect-analysis department manager by Micron Memory Taiwan (MMT). *See* Micron Complaint, USD-0352748 at 16 and USD-0352759 Item No. A-8 at 2. A transcript of the MJIB interrogation of Yi-Leng Chen confirms that he was engaged from 11:25 until 19:25 on 2/13/2017 reviewing files in a live environment on seized UMC devices which are actual Exhibits in this case. The Exhibits included several USB devices and Kenny Wang's Acer laptop. *See* transcript attached as **Exhibit 21**.
 - d) 2/14/2017 03:19 to 23:42 – machine being accessed.
 - e) 2/20/2017 11:10 to 11:14 – machine being accessed.

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- f) 2/20/2017 11:13 – Generic Flash Disk USB Device, Serial Number DA21546E&0 inserted into laptop. This USB device has not been produced for examination. *See* USB Devices report attached as **Exhibit 15**.
- g) 2/20/2017 12:21 forensically imaged to EnCase E01 format by Examiner 49052.

The Crain Report makes no reference to the potential spoliation of evidence and alteration of data that occurred on this USB device after it had been seized by the MJIB. A total of 512 files had their time and date metadata altered after seizure by the MJIB. There is activity on this laptop drive on four separate dates after the device came into the possession of the MJIB.

G. 106030-25-13 (BRG013) PNY 3.0 128GB USB drive

Following seizure and prior to forensic imaging, 7 files or folders had their Modified, Accessed and Created time and date metadata information updated, including 1 file which was created and deleted on or after that date. *See* MJIB Alteration File Listing report attached as **Exhibit 16**.

1. Chronology of times when data was being altered:
 - a) 2/9/2017 – submitted by Huang Shu-han to Taichung District Prosecutor's Office.
 - b) 2/13/2017 13:47 to 14:01 – drive being accessed. According to Micron's Civil Complaint, a review was performed by witness Yi-Leng Chen who was employed as the real-time defect-analysis department manager by Micron Memory Taiwan (MMT). *See* Micron Complaint, USD-0352748 at 16 and USD-0352759 Item No. A-8 at 2. A transcript of the MJIB interrogation of Yi-Leng Chen confirms that he was engaged from 11:25 until 19:25 on 2/13/2017 reviewing files in a live environment on seized UMC

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devices which are actual Exhibits in this case. The Exhibits included several USB devices and Kenny Wang's Acer laptop. *See* transcript attached as **Exhibit 21**.

- c) 2/14/2017 – drive being accessed at 22:40.
- d) 2/20/2017 15:03 – forensically imaged to EnCase E01 format by Examiner 49052.

The Crain Report makes no reference to the potential spoliation of evidence and alteration of data that occurred on this USB device after it had been seized by the MJIB. It is apparent from the transcript of the MJIB interrogation of the Micron employee Yi-Leng Chen that he actually reviewed the files and folders on this device which had their metadata altered. In his answer at the bottom of page 4 of the interrogation transcript he specifically references the file \4GLP2\WT\4GMLP2A_Category_Bin_define_Ver0A (Non-C-comp)_vl.xlsm, which is the file that was created and then deleted from the device. *See* transcript attached as **Exhibit 21**.

H. 10630-25-14 (BRG014) Kingston Data Traveler 2.0 64GB USB drive

Following seizure and prior to forensic imaging 7 files were created on the drive and then deleted on or after that date. *See* MJIB Alteration File Listing report attached as **Exhibit 17**.

1. Chronology of times when data was being altered:
 - a) 2/9/2017 – submitted by Huang Shu-han to Taichung District Prosecutor's Office.
 - b) 2/14/2017 02:07 to 02:26 – drive being accessed. According to Micron's Civil Complaint, a review was performed by witness Yi-Leng Chen who was employed as the real-time defect-analysis department manager by Micron Memory Taiwan (MMT). *See* Micron Complaint, USD-0352748 at 16 and USD-0352759 Item No. A-8 at 2. A transcript of the MJIB interrogation of Yi-Leng

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Chen confirms that he was engaged from 11:25 until 19:25 on 2/13/2017 reviewing files in a live environment on seized UMC devices which are actual Exhibits in this case. The Exhibits included several USB devices and Kenny Wang's Acer laptop. *See* transcript attached as **Exhibit 21**.

- c) 2/20/2017 11:01 – forensically imaged to EnCase E01 format by Examiner 49052.

Mr. Crain in his report in *Table 1: List of Frequently Referenced Evidence Items* erroneously lists the Custodian of BRG014 to be Ho Jianting (JT Ho), when the table in Exhibit 2, Page 51 to the Micron Complaint clearly lists the owner of the device as Kenny Wang.

The Crain Report makes no reference to the alteration of data that occurred on this USB device after it had been seized by the MJIB. It is apparent from the transcript of the MJIB interrogation of Micron employee Yi-Leng Chen that he actually reviewed the files and folders on this device which were created and then deleted from the device. In his answer at the bottom of page 4 and the top of page 5 of the interrogation transcript he specifically references the files DRAM data\DRAM flow data\cell dummy\ECD-2013000667-001_25nmS_6F2_MemoryCel.ppt and 80series_dram_overview_and_comparison.pptx which are two of the files which were created and then deleted from the device. *See* transcript attached as **Exhibit 21**.

I. 10630-25-23 (BRG023) Kingston drive from Acer Laptop

Following seizure and prior to forensic imaging 2,114 files or folders had their Modified, Accessed and Created time and date metadata information updated, including 1,369 files or folders that were created and 94 files or folders deleted on or after that date. *See* MJIB Alteration File Listing report attached as **Exhibit 18**.

1. Chronology of times when data was being altered:

- a) 2/14/2017 – seized by New Taipei Investigation Office.

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b) 2/14/2017 16:20 to 21:07 – data being created on laptop drive.

There is no other user activity on the laptop on this date.

c) 2/18/2017 17:39 – forensically imaged to EnCase E01 format by Examiner 49052.

Forensic analysis confirms that after the Acer Laptop was seized from Rong Le-tian and in the possession of the Prosecutor and MJIB officers, Windows File Explorer was used to open 136 files. When files are opened in this manner, the Windows Operating System records details in the Internet Explorer Main History, showing the file path and file title, the User profile being used and the time and date that the file was opened. *See* report attached as **Exhibit 19**.

The Crain Report makes no reference to the alteration of data on this laptop after it had been seized by the MJIB. More than 1,350 files and folders were added to the drive in this laptop, and more than 90 files were deleted. Of the files and folders added, 590 were added to the User Desktop under the folder NBD, this data originated from the network server \\p58f21data\. The total data size of the added files is 2.1 Gigabytes. All of that overwritten data space has been destroyed including any evidence that existed thereon at the time of seizure by the MJIB.

J. 10630-25-24 (BRG024) Transcend 32GB USB drive

Following seizure and prior to forensic imaging 2,854 files or folders had their Modified, Accessed and Created time and date metadata information updated. All 2,854 of the files and folders were created on 2/14/2017 and 3 files or folders were deleted on or after that date. *See* MJIB Alteration File Listing report attached as **Exhibit 20**.

1. Chronology of times when data was being altered:

a) 2/14/2017 – seized by New Taipei Investigation Office.

b) 2/14/2017 18:28 to 20:57 – data being created on drive. There is no other user created data on the drive.

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- c) 2/20/2017 10:29 – forensically imaged to EnCase E01 format by Examiner 49052.

The Crain Report makes no reference to the potential spoliation of data on this laptop after it had been seized by the MJIB. More than 2,850 files and folders were added to the drive in this laptop with a total data size of more than 5.6 Gigabytes. All of that overwritten data space has been destroyed including any evidence that existed thereon at the time of seizure by the MJIB.

VII. Crain’s Analysis Suggestively Attributes Device Activity to Defendants, Which is Incorrect

In my review of the Crain Report, I found a significant number of inconsistencies in the Section titled “Findings / Subjects of Expert Testimony.” My findings are detailed below.

A. Opening of Alleged Trade Secret Files

In Section 21 of his report, Mr. Crain lists instances of when he and his team located forensic evidence on the seized devices, which involved interaction with alleged trade secret 5, **【DR25nmS】 Design rules Periphery_EES_2012000026-013_Rev.13.xls**.

The entry at 21) k and the associated footnote are reproduced here:

21) Regarding trade secret 5 (**【DR25nmS】 Design rules Periphery_EES_2012000026-013_Rev.13.xls**), my team and I located forensic evidence indicating this file was:

k. 2/13/17: opened using BRG009, from BRG009.141

Footnote 141 See BRG009 at: Documents and Settings\Administrator.KENNY\Recent\ **【DR25nmS】 Design rules Periphery_EES_2012000026-013_Rev.13.lnk**, showing file opened from: C:\Documents and Settings\Administrator.KENNY\桌面\USB\90s\V90B\0. Design\EES Document\ **【DR25nmS】 Design rules Periphery_EES_2012000026-013_Rev.13.xls**, whereby the C:\ volume had a volume serial number of B0942C92 (hex), corresponding to BRG009

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Mr. Crain omits to reference the fact that BRG009, the Kenny Wang Acer laptop, had been seized six days earlier by MJIB officers at 14:10 on 2/7/2017. This file was actually apparently opened by an MJIB officer at 15:43 on 2/13/2017, when logged in live on the laptop using the Administrator.KENNY user profile. The MJIB interrogation of Yi-Leng Chen, who was employed as the real-time defect-analysis department manager by Micron Memory Taiwan (MMT), confirms that he was present on 2/13/2017. *See* transcript attached as **Exhibit 21**.

B. Opening of Micron confidential or the “company” embedded metadata criteria

As referenced in Section VII A, above, Mr. Crain has again mistakenly included MJIB activity in his report. Mr. Crain produced Exhibit D, which depicts the results of a process he explained in detail in his report. *See* Crain Report at 6 -7 (Paragraphs 6, 7, 8 and, 9). However, Mr. Crain includes 54 records of files being opened, after the devices had already been seized by the MJIB.

Table 3 is derived from Crain’s Exhibit D. The original entry numbers are retained for comparison purposes.

Table 3: Extract from Crain’s Exhibit D confirming that “Micron confidential” and “Company” files were opened by the MJIB not the Defendants

No	Folder and File Path of Opened Document	User Profile	MJIB Seizure Time UTC +8	Opened Time UTC +8	Forensic Image Time UTC +8
65	C:\Users\00002686\Desktop\NBD\Device\Logic Device\Training Material\material\Structure DRAM (Micron).ppt		2/14/2017	2/14/17 18:17	2/20/17 10:01
67	C:\Users\00046685\Desktop\1060207\#[4GLP3] CP2_C80 TRCD correlate to PE remain ox_1107.pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:39	2/20/17 11:02
68	C:\Users\00046685\Desktop\1060207\# FAB16 4G3F FT 2LT C20(LtRAS StRP) worse analysis_20130911.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:51	2/20/17 11:02
69	C:\Users\00046685\Desktop\1060207\4G3F_No n-Epi_wafer_high_Rs_result_130927.pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:39	2/20/17 11:02
70	C:\Users\00046685\Desktop\1060207\DRAM_2 Onm_Process_(V00H)_- _Traveler_Dec2014Update_PDF.pdf	46685 (Kenny Wang)	2/7/2017 14:10	2/13/17 15:51	2/20/17 11:02

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No	Folder and File Path of Opened Document	User Profile	MJIB Seizure Time UTC +8	Opened Time UTC +8	Forensic Image Time UTC +8
71	C:\Users\00046685\Desktop\1060207\SIMS_presentation for Fab-fianl version.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 2:26	2/20/17 11:02
72	C:\Users\00046685\Desktop\1060207\Structure DRAM (Micron).ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/7/17 23:39	2/20/17 11:02
73	C:\Users\00046685\Desktop\1060207\v01m_MWD_size-study_16Jan2014_3.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:40	2/20/17 11:02
74	C:\Users\00046685\Desktop\1060207\V91M CP1-Bin147(TRCD 15.0NS) vs NLPL31 margin_0312.pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 3:26	2/20/17 11:02
75	C:\Users\00046685\Desktop\1060207\V9AM CP2-TWR_tRCD Improvement.pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:39	2/20/17 11:02
76	C:\Users\00046685\Desktop\1060207\参考.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:10	2/20/17 11:02
77	C:\Users\00046685\Desktop\DEVICE JOB\ISSUE\P+ POLY B PENETRATE\SIMS_presentation for Fab-fianl version.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/13/17 18:00	2/20/17 11:02
95	C:\Users\00046685\Downloads\DRAM_20nm_Process_(V00H)_Traveler_Dec2014Update_PDF.pdf	46685 (Kenny Wang)	2/7/2017 14:10	2/13/17 17:47	2/20/17 11:02
99	C:\Users\00046685\Downloads\教材\# [4GLP3] CP2_C80 TRCD correlate to PE remain ox_1107.pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:50	2/20/17 11:02
100	C:\Users\00046685\Downloads\教材\# 100s imp reduction.xlsx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:50	2/20/17 11:02
101	C:\Users\00046685\Downloads\教材\# FAB16 4G3F FT 2LT C20(LtRAS StRP) worse analysis_20130911.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:51	2/20/17 11:02
102	C:\Users\00046685\Downloads\教材\25nmTr.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 5:09	2/20/17 11:02
103	C:\Users\00046685\Downloads\教材\130219_A225-0934_TcReduction.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:54	2/20/17 11:02
104	C:\Users\00046685\Downloads\教材\1G3F C19 margin up.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:52	2/20/17 11:02
105	C:\Users\00046685\Downloads\教材\20140416 Super scan application summary_V2.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:54	2/20/17 11:02
106	C:\Users\00046685\Downloads\教材\2E0F VTP31075 margin for CP6_BIN7(ICC).pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:52	2/20/17 11:02
107	C:\Users\00046685\Downloads\教材\2G3D SN cplk 溫度依存_0308.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:53	2/20/17 11:02
108	C:\Users\00046685\Downloads\教材\2M rework caused PTS HSRT fail.pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:53	2/20/17 11:02
109	C:\Users\00046685\Downloads\教材\3B Co EA.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:53	2/20/17 11:02

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No	Folder and File Path of Opened Document	User Profile	MJIB Seizure Time UTC +8	Opened Time UTC +8	Forensic Image Time UTC +8
110	C:\Users\00046685\Downloads\教材\42 TiN NH3-preheat time optimization_2495415_204194K.doc	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 2:18	2/20/17 11:02
111	C:\Users\00046685\Downloads\教材\4G3F_Non-Epi_wafer_high_Rs_result_130927.pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:53	2/20/17 11:02
112	C:\Users\00046685\Downloads\教材\73_82 WAT Difference-2015-5-27.xlsx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:54	2/20/17 11:02
113	C:\Users\00046685\Downloads\教材\F63 3B JL curve study(part2).xls	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:54	2/20/17 11:02
114	C:\Users\00046685\Downloads\教材\F63 3B JL curve study(part3).xls	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:54	2/20/17 11:02
115	C:\Users\00046685\Downloads\教材\v01m_MWD_size-study_16Jan2014_3.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:54	2/20/17 11:02
116	C:\Users\00046685\Downloads\教材\91M CP1-Bin147(TRCD 15.0NS) vs NLPL31 margin_0312.pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:56	2/20/17 11:02
117	C:\Users\00046685\Downloads\教材\V9AM CP2-TWR_trCD Improvement.pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 1:55	2/20/17 11:02
118	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\# [4GLP3] CP2_C80 TRCD correlate to PE remain ox_1107.pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 2:03	2/20/17 11:02
119	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\# 100s imp reduction.xlsx	46685 (Kenny Wang)	2/7/2017 14:10	2/13/17 17:40	2/20/17 11:02
120	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\# FAB16 4G3F FT 2LT C20(LtRAS StRP) worse analysis_20130911.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 2:04	2/20/17 11:02
121	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\# 25nmTr.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:21	2/20/17 11:02
122	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\130219_A225-0934_TcReduction.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:23	2/20/17 11:02
123	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\1G3F C19 margin up.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:22	2/20/17 11:02
124	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\2E0F VTP31075 margin for CP6_BIN7(ICC).pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:22	2/20/17 11:02
125	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\2G3D SN cplk 温度依存_0308.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:22	2/20/17 11:02
126	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\2M rework caused PTS HSRT fail.pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 2:05	2/20/17 11:02
127	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\3B Co EA.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:22	2/20/17 11:02

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No	Folder and File Path of Opened Document	User Profile	MJIB Seizure Time UTC +8	Opened Time UTC +8	Forensic Image Time UTC +8
128	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\42 TiN NH3-preheat time optimization_2495415_204194K.doc	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:23	2/20/17 11:02
129	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\4G3F_Non-Epi_wafer_high_Rs_result_130927.pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:22	2/20/17 11:02
130	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\73_82 WAT Difference-2015-5-27.xlsx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:23	2/20/17 11:02
131	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\F63 3B JL curve study(part2) .xls	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:24	2/20/17 11:02
132	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\v01m_MWD_size-study_16Jan2014_3.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:25	2/20/17 11:02
133	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\V91M CP1-Bin147(TRCD 15.0NS) vs NLPL31 margin_0312.pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/13/17 17:40	2/20/17 11:02
134	C:\Users\00046685\Downloads\教材-20161223T111122Z\教材\V9AM CP2-TWR_trCD Improvement.pptx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:25	2/20/17 11:02
144	D:\NBD\Device\Logic Device\Training Material\material\Structure DRAM (Micron).ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/13/17 17:26	2/20/17 11:02
145	D:\NBD\Device\TEMP\● SPA vs VT.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:36	2/20/17 11:02
146	D:\NBD\Device\TEMP\參考.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:35	2/20/17 11:02
147	D:\NBD\Device\WAT Program and Testkey Description\F32 WAT Program Testplan Check_20161207.xlsx	46685 (Kenny Wang)	2/7/2017 14:10	2/8/17 0:39	2/20/17 11:02
148	D:\NBD\Device\訓練教材&知識分享\Process Flow\F32 DRAM brief Summary for Kim.ppt	46685 (Kenny Wang)	2/7/2017 14:10	2/13/17 16:58	2/20/17 11:02

Mr. Crain's Exhibit D also identifies 12 records of files that were being opened on 12/31/2002. It appears that Mr. Crain did not pay attention to the fact that some of the file titles indicated that the files were actually created, several years later.

- No. 62 - December 2013 "esda_tlp_journal-dec_2013_seth.docx"
- No. 549 - December 2010 "F45 flow parameter 2010227.xls"
- No. 550 - May 2013 "R1 INT F45 Wrap up meeting 0513.ppt"

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- No. 560 - February 2013 “R1 Photo 30nm_4GLP2 Wrap Up Meeting Report_20130207 - PH.ppt”
- No. 361 - February 2013 “Technical transfer meeting of Mobile DRAM (2013.02.07) - ET.ppt”

The date of the 12 documents being opened in Table D is shown as 12/31/2002, but that date is incorrect. In all reasonable probability this was caused by the failure of the internal Complementary Metal Oxide Semiconductor (“CMOS”) battery in the BRG010 laptop. This would cause all time and date metadata on the hard drive to be unreliable. One of the normal basic steps in computer forensics, is to ensure that any discrepancy in the computer’s time and date setting is noted at the time of forensic imaging. I am unable to confirm whether this was done by the MJIB forensic laboratory as no meaningful chain of custody records have been provided for examination.

Table 4 is derived from Crain’s Exhibit D. The original entry numbers are retained for comparison purposes.

Table 4: Extract from Crain’s Exhibit D listing incorrect dates when 12 “Micron confidential” and “Company” files were opened

No	Folder and File Path of Opened Document	Opened Time	Add'l Opened Time	Artifact Path
62	C:\Documents and Settings\elaine\桌面\Micron\esda_tlp_journal-dec_2013_seth.docx	12/31/2002 16:15		106030-25-10-FUJITSU-NW9XT682R86A.E01 - Partition 1 (Microsoft NTFS, 104.43 GB)\Documents and Settings\elaine\Application Data\Microsoft\Office\Recent\esda_tlp_journal-dec_2013_seth.docx.LNK
548	G:\80s & 70s\2G3C\F45 flow chart_100127.ppt	12/31/2002 16:07		106030-25-10-FUJITSU-NW9XT682R86A.E01 - Partition 1 (Microsoft NTFS, 104.43 GB)\Documents and Settings\elaine\Recent\F45 flow chart_100127.ppt.lnk
549	G:\80s & 70s\2G3C\F45 flow parameter 20101227.xls	12/31/2002 16:07		106030-25-10-FUJITSU-NW9XT682R86A.E01 - Partition 1 (Microsoft NTFS, 104.43 GB)\Documents and Settings\elaine\Application Data\Microsoft\Office\Recent\F45 flow parameter 20101227.xls.LNK

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No	Folder and File Path of Opened Document	Opened Time	Add'l Opened Time	Artifact Path
550	G:\80s & 70s\2G3C\R1 INT F45 Wrap up meeting 0513.ppt	12/31/2002 16:06		106030-25-10-FUJITSU-NW9XT682R86A.E01 - Partition 1 (Microsoft NTFS, 104.43 GB)\Documents and Settings\elaine\Recent\R1 INT F45 Wrap up meeting 0513.ppt.lnk
551	G:\80s & 70s\2G3D\Kick off meeting\Rexchip-ElpidaF38Mtg110302.ppt	12/31/2002 16:23	12/31/2002 16:10	106030-25-10-FUJITSU-NW9XT682R86A.E01 - Partition 1 (Microsoft NTFS, 104.43 GB)\Documents and Settings\elaine\Recent\Rexchip-ElpidaF38Mtg110302.ppt.lnk
552	G:\80s & 70s\2G3D\Yamazaki san report E300 weekly\Yamazaki introduce F38\COPY F38 Process outline _ current status for Rex101012_1.ppt	12/31/2002 16:32	12/31/2002 16:12	106030-25-10-FUJITSU-NW9XT682R86A.E01 - Partition 1 (Microsoft NTFS, 104.43 GB)\Documents and Settings\elaine\Recent\COPY F38 Process outline _ current status for Rex101012_1.ppt.lnk
553	G:\80s & 70s\2G3D\Yamazaki san report E300 weekly\Yamazaki introduce F38\COPY_F38 E300 Process status for Rex1202_1.ppt	12/31/2002 16:20		106030-25-10-FUJITSU-NW9XT682R86A.E01 - Partition 1 (Microsoft NTFS, 104.43 GB)\Documents and Settings\elaine\Recent\COPY_F38 E300 Process status for Rex1202_1.ppt.lnk
554	G:\80s & 70s\2G3D\Yamazaki san report E300 weekly\Yamazaki introduce F38\F38 E300 Process status for Rex1118_A.ppt	12/31/2002 16:21		106030-25-10-FUJITSU-NW9XT682R86A.E01 - Partition 1 (Microsoft NTFS, 104.43 GB)\Documents and Settings\elaine\Recent\F38 E300 Process status for Rex1118_A.ppt.lnk
555	G:\80s & 70s\30nm\4G3B\4G3B Latest flow.xls	12/31/2002 16:49		106030-25-10-FUJITSU-NW9XT682R86A.E01 - Partition 1 (Microsoft NTFS, 104.43 GB)\Documents and Settings\elaine\Application Data\Microsoft\Office\Recent\4G3B Latest flow.xls.LNK
556	G:\80s & 70s\30nm\4G3F\4G3F_wrapup_0531\4G3F_WrapUp.ppt	12/31/2002 16:50		106030-25-10-FUJITSU-NW9XT682R86A.E01 - Partition 1 (Microsoft NTFS, 104.43 GB)\Documents and Settings\elaine\Application Data\Microsoft\Office\Recent\4G3F_WrapUp.ppt.LNK
560	G:\80s & 70s\專案網站\30nm 4GLP2 Test Run\Meeting Report\130206 Support Meeting\R1 Photo 30nm_4GLP2 Wrap Up Meeting Report_20130207 - PH.ppt	12/31/2002 16:31		106030-25-10-FUJITSU-NW9XT682R86A.E01 - Partition 1 (Microsoft NTFS, 104.43 GB)\Documents and Settings\elaine\Application Data\Microsoft\Office\Recent\R1 Photo 30nm_4GLP2 Wrap Up Meeting Report_20130207 - PH.ppt.LNK

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No	Folder and File Path of Opened Document	Opened Time	Add'l Opened Time	Artifact Path
561	G:\80s & 70s\專案網站\30nm 4GLP2 Test Run\Meeting Report\130206 Support Meeting\Technical transfer meeting of Mobile DRAM (2013.02.07) - ET.ppt	12/31/2002 16:30		106030-25-10-FUJITSU-NW9XT682R86A.E01 - Partition 1 (Microsoft NTFS, 104.43 GB)\Documents and Settings\elaine\Application Data\Microsoft\Office\Recent\Technical transfer meeting of Mobile DRAM (2013.02.07) - ET.ppt.LNK

VIII. Access Under a User Profile Does Not Confirm Custodian Identity

Throughout his report, Mr. Crain appears to suggest that activity under a User profile might be attributable to the Custodian whom the profile was allocated to. That position is not supportable when one considers the below examples, all of which were the result of MJIB activity when logged in under various User profiles *after* the devices had been seized.

- The errors shown above in Table 3 for the 53 entries opened by the Prosecutor or MJIB, but listed under the 00046685 (Kenny Wang) user profile, confirm that is not the case.
- The entry from Crain's report at **VIII.A** above, when an alleged trade secret file was opened on BRG009 on 2/13/2007, six days after the User last had physical access to the Acer laptop, confirm that is not the case.
- Analysis of BRG003 shows that after seizure of that laptop by the MJIB, between 2/7/2017 and 2/17/2017 35,533 files and folders had their time and date metadata altered. 2,147 of those were under the 00046885 (Kenny Wang) profile, notwithstanding the machine was in the possession of the MJIB at the time.
- Analysis of BRG009 shows that after seizure of that Acer laptop by the MJIB, between 2/7/2017 and 2/13/2017 4,537 files and folders had their time and date

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metadata altered. 2,036 of those were under the Administrator KENNY (Kenny Wang) profile. The MJIB altered those entries, not Kenny Wang.

- BRG012 has been described to me as a “Public” laptop which was accessible to employees at UMC. Following seizure of this UMC HP laptop by MJIB, between 2/9/2017 and 2/20/2017, 512 files and folders had their time and date metadata updated. 32 of those were under the 00046294 (JT Ho) profile, 21 were under the 00046324 (Neil Lee) profile. This activity related to the MJIB and neither of these two users, again confirming that Profile activity does not mean use by the Custodian that the profile was issued to.
- Analysis of BRG023 shows that after seizure of that Acer laptop by the MJIB, on 2/14/2017 2,114 files and folders had their time and date metadata altered. 1,208 of those were under the 00002686 (Le-Tien Jung) profile. This activity related to the MJIB not the User.

IX. USB Devices Attached to Laptops by MJIB post Seizure

In Section 10 of Mr. Crain’s Report, he addresses USB device activity on non-produced USB devices, stating that, “[w]hile the logs and forensic artifacts on the devices that we examined can identify the existence of some trade secret documents on these unrecovered devices, it is entirely possible that the unrecovered devices may contain substantially more files (including potentially more trade secret documents), and we simply do not know about it because the devices were not available for analysis.” He then describes the 3 USB devices which were not seized by the MJIB and produced for examination. Mr. Crain’s Report makes no reference to the attachment of multiple USB devices to some of the laptops after the laptops were seized by the MJIB, however; nor does it reference the fact that those MJIB USB devices were not produced for examination. We do not know if data was introduced to the seized computers from these missing USB devices, nor do we know if data was copied to the missing USB devices.

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Table 5 shows that there were a total of 10 USB devices attached to three of the defendants' computers following seizure by the MJIB. The attachments of these 10 USB devices occurred prior to the machines being forensically imaged. There are 8 USB devices that were not produced by the MJIB; the other two devices were USB drives that the MJIB had seized, which they subsequently attached to other seized computers, further spoliating evidence and cross-contaminating the data stored on those seized devices.

Table 5: USB devices attached by MJIB after seizure and before forensic imaging, 8 USB devices not produced for examination

Laptop to which the MJIB attached the USB	Friendly Name	Serial Number	Last Connected Date/Time - UTC+08:00 (M/d/yyyy)	MJIB Activity
BRG003	Generic Flash Disk USB Device	07C0C091&0	2/8/17 0:33	Not Produced
BRG003	PNY USB 3.0 FD USB Device	340373E9817A4117B03132FD0F7679&0	2/13/17 15:34	MJIB Seized Item BRG013
BRG003	JetFlash Transcend 8GB USB Device	OG23WAHU&0	2/17/17 9:58	Not Produced
BRG003	PIONEER DVD-RW DVR-XD11 USB Device	NGQC171770WL____&0	2/17/17 10:08	Not Produced
BRG009	-Pretec 02GB USB Device	01D1700000050B&0	2/7/17 16:57	Not produced
BRG009	-Pretec 02GB USB Device	1a451c61cd47fb&0	2/7/17 16:57	Not produced
BRG009	USB 2.0 Flash Disk USB Device	0910baf231d019&0	2/7/17 17:04	Not produced
BRG009	Generic External USB Device	57442D575852314542305956&0	2/7/17 17:07	Not produced
BRG009	USB Disk RunDisk USB Device	0610291136373&0	2/7/17 17:10	MJIB Seized Item BRG006
BRG012	Generic Flash Disk USB Device	DA21546E&0	2/20/17 11:13	Not produced

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X. MJIB Downloaded Data from UMC Servers on to Seized Laptops

Forensic analysis shows that two of the laptops that were seized by the MJIB were used to connect to UMC servers during the time that the MJIB were on site at the UMC offices in the Tainan Science Park factory. During that network access, the MJIB downloaded tens of thousands of files to the seized UMC laptops. The network downloaded data was then reviewed by the MJIB over the following days. The review of BRG003 was apparently assisted by Micron employee Yi-Leng Chen on 2/13/2017.

My findings regarding this issue are set forth below:

1. 106030-25-03 (BRG003) Intel 240GB UMC Laptop drive
 - a. 2/7/2017 14:10 – seized by New Taipei Investigation Office.
 - b. 2/7/2017 14:17 – to 23:58 machine being accessed.
 - c. 2/7/2017 14:43 – System Registry records a Wireless Network Interface Connection to the umc.com Network. *See* Network Interfaces (Registry) report attached as **Exhibit 22**.
 - d. 2/7/2017 15:18 - Microsoft Internet Explorer used to access the search.umc.com domain, and visit the UMC Enterprise Search page to run the search query “110s” (Universal Resource Locator (“URL”) <http://search.umc.com/?q=110s>). *See* UMC Enterprise Search Web Page and metadata details attached as **Exhibit 23 and Exhibit 24 respectively**.
 - e. 2/7/2017 15:36 to 16:09 – a total of 32,656 files and folders within the NBD folder and sub folder structure were copied from the UMC server \\p58f21\ and created on the Logical D: partition of the laptop drive. *See* Data Copied from UMC Server 2_7_2017 report attached as **Exhibit 25**.
 - f. The Laptop Operating System Network Share Information confirms that the server folder \\p58f21\Data\NBD folder is mapped to the Laptop. Jump List and Link File Records confirm that the

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\\p58f21\Data\NBD folder is mapped to the laptop as Logical drive N. See Network Share Information report attached as **Exhibit 26**.

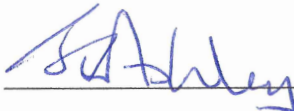
10630-25-23 (BRG023) Kingston drive from Acer Laptop

- a. 2/14/2017 – seized by New Taipei Investigation Office.
- b. 2/14/2017 - 16:20 to 21:07 – data being created on laptop drive.
There is no other user activity on the laptop on this date.
- c. 2/14/2017 – 17:21 to 17:22 created on the Windows Desktop under the 00002686 User profile were:
 - i. \NBD (pf58f21data)\ folder
 - ii. \NBD (pf58f21data)\ NBD (pf58f21data)\ folder
 - iii. \NBD (pf58f21data)\ NBD (pf58f21data)\821.pptx file
 - iv. \ NBD (pf58f21data)\821.pptx.

The folders and files were deleted into the Recycle Bin at 17:50. See Recycle Bin records attached as **Exhibit 27**.

- d. 2/14/2017 – 17:32 the C:\Users\00002686\Desktop\NBD folder was created. During the next 23 minutes a total of 590 files and folders were copied to this NBD folder on the laptop from the UMC server \\p58f21\. See Data Copied from UMC Server 2_14_2017 report attached as **Exhibit 28**.
- e. The Laptop Operating System Network Share Information confirms that the server folder \\p58f21\Data\NBD is mapped to the Laptop. Jump List and Link File Records confirm that the \\p58f21\Data\NBD folder is mapped to the laptop as Logical drive N. See Network Share Information report attached as **Exhibit 29**.

Dated: September 10, 2021



John F. Ashley

Managing Director, Digital Forensics and Expert Services
Consilio